

Q171
L492h

A
A
0
0
0
4
7
5
5
3
1
0



UC SOUTHERN REGIONAL LIBRARY FACILITY

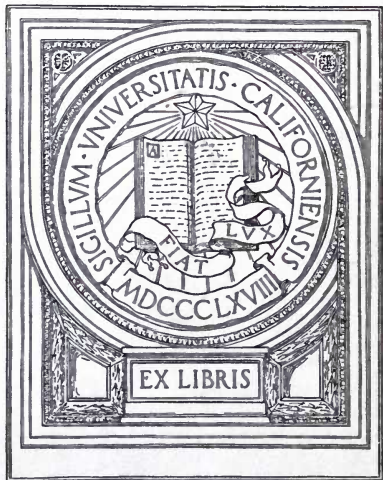
The Higher Utilities of Science.

By

Joseph LeConte

California
Regional
Library

UNIVERSITY OF CALIFORNIA
AT LOS ANGELES



ROBERT ERNEST COWAN

THE HIGHER UTILITIES OF SCIENCE.

PROF. JOSEPH LECONTE.

THE HIGHER UTILITIES OF SCIENCE.

DELIVERED BY

PROF. JOSEPH *LECONTE*,

BEFORE THE

CHIT-CHAT CLUB,

AT THEIR SEVENTH ANNUAL BANQUET,

San Francisco, November 14th, 1881.

UNIV. OF CALIFORNIA
AND JOSEPH L. LECONTE

AMERICAN TO VINI
Y498123.12084 80.14

Q171
L492h

THE HIGHER UTILITIES OF SCIENCE.

In response to the toast: SCIENCE.—She teaches all things.
“A little learning is a dangerous thing.”

We hear much in these times of diffusion of knowledge and popularization of Science. I sincerely sympathize with the movement, and have done something myself to carry it on. But it is seldom we get a good without a corresponding evil. In the extensive diffusion of knowledge, are we not in some danger of making the stratum very thin? In the universal popularization of Science are we not in some danger of making our science superficial? In a word, are we not in danger of being flooded with a shallow Sciologism instead of nourished and strengthened by a profound Science?

Yet I do not think the danger from this quarter as great as many imagine. The chief danger is not so much in the quantity as in the quality of Science; not so much in the amount as in the *spirit* in which it is given and received. There is an *evil* as well as a good spirit of Science. The evil spirit of Science is boastful, arrogant, contemptuous; it despises Art, contemns Philosophy, and especially sneers at Religion. Such Science is hurtful to the individual and baneful to society, whether its quantity be great or small. The good spirit of Science, on the contrary, recognizes the co-ordinate value

and equal dignity of all the great departments of human thought, and co-operates with them in generous rivalry for the elevation of humanity. This spirit is beneficent, whether the amount of Science be much or little. Like Charity, "it vaunteth not itself, is not puffed up;" like Mercy, it is "twice blessed, blessing him that gives and him that takes."

It is this liberal, generous, beneficent spirit of Science that I wish to hold up to admiration. Leaving aside the manifold and obvious ways in which Science contributes to our material well-being, I wish to point out some of the less recognized, because less obtrusive, and yet the far nobler ways in which she has co-operated with all other great departments in the elevation of our humanity.

I. In comparing ancient with modern thought, nothing, it seems to me, is more striking than the difference in the mode in which *Nature is viewed in relation to Man*. The tendency of ancient thought was to exalt man into a demi-god, and correspondingly to despise Nature. The tendency of modern scientific thought, on the contrary, is to sink man into comparative nothingness, in bewildering contemplation of the infinite vastness of Nature. This change is seen both in Art and in Science; in Art, in the increase of those departments like landscape painting and descriptive poetry, which deal with nature; in Science, in the amazing advance of the natural sciences. To the Greek, nothing but man

was a worthy subject of Fine Art, Nature being valued only in its subserviency to man. That intense love of Nature for Nature's self, so characteristic of the cultured modern man—the passion for mountain and forest, for crag and cliff, for rushing torrent and leaping waterfall, for blue sky and drifting clouds; a passion often degenerating into dreamy reverie and even into weak and morbid sentimentality—would have been wholly unintelligible to the active, healthy, man-worshipping spirit of an ancient Greek. The reason is obvious. The mystery of Nature, the Infinite in Nature, and therefore the sense of awe in the presence of great Nature was unfelt; the Divine in Nature was unperceived, or else took the human form of nymphs and dryads. Under such conditions a high art is impossible. We must reverence what we strive to embody, or our work is mechanical. The deliberate representation of Nature for its own sake, whether in painting or poetry, is therefore a modern Art. Exquisite bits of Nature description we indeed have in ancient poetry—wonderfully vivid and beautiful, especially in the *Odyssey*—but these are only for background to the human figures, for setting to the human gem.

The same change is seen far more plainly in the amazing progress of all the Sciences dealing with nature. The Greek philosopher despised Nature far too heartily to become her pupil. He arrogated to himself the power to deduce "*a priori*"

the laws of Nature from within—the laws of the macrocosm from the study of the microcosm. He sought to *impose* laws on Nature, instead of sitting at her feet and learning her laws from her own lips. Under these conditions Science is impossible. Mathematics, indeed, was possible and was therefore cultivated, because *deduced a priori* from within from self-evident truths; but a Science of Nature must be *induced* from external observed facts.

Thus, then, we perceive that the human mind has steadily passed from the study and contemplation of itself to the study and contemplation of Nature. But this change, though necessary, is not, cannot be, final. For when, by the study of Nature, a solid basis for Philosophy is laid, the human mind must again return to the study and contemplation of itself, as the greatest and most beautiful of Nature's works.

Now, in effecting this great and necessary change, though *all* sciences co-operated, yet two were peculiarly active; these are Astronomy and Geology. Nothing has so tended to exalt Nature as the introduction of the *idea of an infinite cosmos*, both in Space and Time. Nothing has so tended to humble the pride of man as the recognition of the astounding fact that this earth, his habitation—therefore imagined to be the whole universe, sun, moon and stars being but little satellites, revolving at no great distance about her, and for his behoof—is

herself but a little satellite, an atom in an infinite space filled with other worlds far greater than she; unless it be that other similar fact, that his *time*—the life of his race—theretofore imagined to be all of Time, is but a moment in the infinite lapse of time represented by the history of the earth. But mark the difference: Astronomy leaves him there humiliated, prostrate in the dust; Geology takes him by the hand, lifts him up and restores him to his dignity. Astronomy gives no hint that *our* earth is in any respect superior to many of the innumerable sister worlds which fill infinite space, or *our* race to many other possible embodied intelligences; but Geology teaches us, in language that cannot be mistaken, that the whole history of the earth, and all previous epochs, find their culmination and significance in *our* epoch, and the whole organic kingdom, struggling upwards through all time, reaches its goal in *man*. Thus *our* Time-world becomes the center of the Time-cosmos, and man the crown of creation. Thus is man restored to his dignity — or rather dignity is given in place of pride. “Pride goeth *before* a fall,” but true dignity comes after.

I have said the change was necessary but not final. A few words to justify this remark.

Proud Philosophy, from the dawn of civilization, attacked at once the highest and most complex problems which can agitate the human mind; but in vain, *because by wrong methods*. The most intri-

cate and beautiful philosophic systems, gossamer-like, were spun from the human brain, but only to be quickly destroyed by criticism. Again other equally beautiful systems arose, with their groups of eager, enthusiastic disciples, but again unsparing criticism, disintegration and death followed in quick succession. Science, on the contrary, far more humble, acknowledging her inability at once to grapple with the highest questions, commenced first with the *lowest*; not because they are the lowest, but because they are the simplest; and making the solution of these the basis for higher work, has built up steadily tier upon tier, story upon story, until she is even now attacking successfully the very questions of Sociology and Psychology which defied the utmost efforts of her more ambitious sister. Her success is the result not of superior power, but of *right method*. There is none other foundation possible but that which is laid in nature. This stone, rejected of the Greek philosophic builders, is accepted by Science, and become the chief cornerstone of the temple of knowledge.

Thus the systems of the old philosophy are like castles in the air — beautiful cloud castles glistening in the early dawn of thought, but vanishing with the light of day. The work of Science is like a substantial castle built on the solid ground, out of enduring material taken from the quarry of Nature, and rising steadily from age to age. Or, to vary the figure: Knowledge and culture, under

the guidance of Philosophy, is like an annual; it springs up quickly and grows rapidly, maturing its beautiful flowers of Art and fruit of Industry and social prosperity, then withers and dies. From seed it springs up again, perhaps under higher forms, but only to pass again and again through the same short and beautiful cycle. Under the guidance of Science, on the contrary, knowledge is a perennial tree, increasing ever in bulk and height by successive additions, flowering and fruiting every year, unexhausted and inexhaustible.

II. The next point to which I would direct attention is the relation of Science to the *idea of human progress*. Observe, I mean not merely progress, but *conscious, voluntary* progress; the conscious striving after a higher goal.

Under the guidance of the Old Philosophy society, though on the whole probably progressive, was so in such staggering and uncertain way as to leave the fact always questionable, and often unrecognized. The idea of human progress, as *we* now understand it, is a modern idea; it did not exist among the ancients, unless dimly perceived by some of the prophets of Israel. What progress they made was an *unconscious evolution*, not the conscious striving toward an ever higher goal. For them, therefore, the Golden Age was in the past, not the future. Whence, then, came the inspiring idea of social progress, so characteristic of modern times? It was first distinctly announced

by Him whom all acknowledge (whatever else they may deny concerning him) as the divinest of teachers. He alone announced a Golden Age *in the future*. But what a Golden Age! How different from all others! A Divine Kingdom on Earth, a Kingdom of Peace, Truth, Love, Justice, Holiness. Thenceforward this idea became a new principle of life and continuous growth. At that moment there was a new birth of Humanity to a higher plane, and all our modern civilization is the natural outgrowth.

Now, what is the relation of Science to this glorious idea? The mission of Science is to *justify and verify it to our reason*. It is the part of Genius and of Inspiration to *see* and announce Truth. It is the part of popular insight to appropriate it by Faith; but, alas, how doubtfully, tremblingly! It is the part of Science to verify it and make it forever certain. Science has verified this great truth *first by its own example*. Amid the successive rise, culmination and decline of all else—Kingdoms and Peoples, Philosophies and Systems—Science alone has marched steadily onward, with a progress which knows no ebb, and becomes thus the pledge and the type of all human progress—the pledge of its certainty and the type of its method. But one department alone has done more than this. Geology alone has *demonstrated* that progress is a universal law of Nature. This she does by that great law so much vilified and misun-

derstood, but so fraught with blessings to humanity; aye, and to true religion—the *universal Law of Evolution*. As, through infinite Time, the inorganic struggled upward to find its goal and completion in the organic; as, through unimagined ages, the organic kingdom struggled upward to find its completion and significance in Man, so Man must take up the progress on a higher plane, and must struggle ever upward, first unconsciously, but now consciously, to reach his completion in the free man—the ideal man. As dead forces found their completion in Life; as Life found its completion in Reason, so Reason must find its completion in Holiness and Freedom—in that perfect harmony of our whole nature which is the only true Holiness and the only true Freedom.

III. But some will say the true test of the importance of any subject is its *utility*. Be it so; but then we must use the word utility in its widest sense. Utility is the capacity to contribute to human life; and therefore must sum up every kind of value. But if human life be indeed not only material, but also spiritual; not only physical, but also psychical; not only temporal, but also eternal, then must utility be the capacity to contribute to all this life thus completely constituted. Thus there must be two kinds of utility—a lower and a higher. A lower which contributes to our material life, and a higher which contributes to our higher intellectual, moral, and spiritual life. The lower

utility of Science—her pre-eminent value in contributing to our material well-being is acknowledged by all, but it is her power to contribute to our higher life, which alone will entitle her to our highest love and reverence; which alone will entitle her to hold rank with Art, Philosophy and Religion. If I do not dwell now on the lower utility of Science it is not because I would undervalue it. I know full well that, as in the individual so in society, intellectual vigor and spiritual elevation is largely conditioned on physical well-being and material prosperity. Science is not too proud to stoop to contribute to even the lowest wants of man, but she reaches also up to his highest. She sweeps the whole gamut of human wants, from the lowest to the highest. All honor, then, to the lower utility of Science.

If, therefore, I do not now dwell on this lower utility it is not because I do not highly value it, but because, through its obviousness, the higher utility is often entirely overlooked. Many even intelligent men seem to lose sight of the chief glory of Science—her capacity to elevate our highest nature. There are many even intelligent men who seem to think that the chief end and highest function of Science is to embody itself in useful art—to feed, clothe and bear us about; to feed us more sumptuously, to clothe us more gorgeously, and to bear us about more swiftly and comfortably; that he who spends his whole life in reverently studying

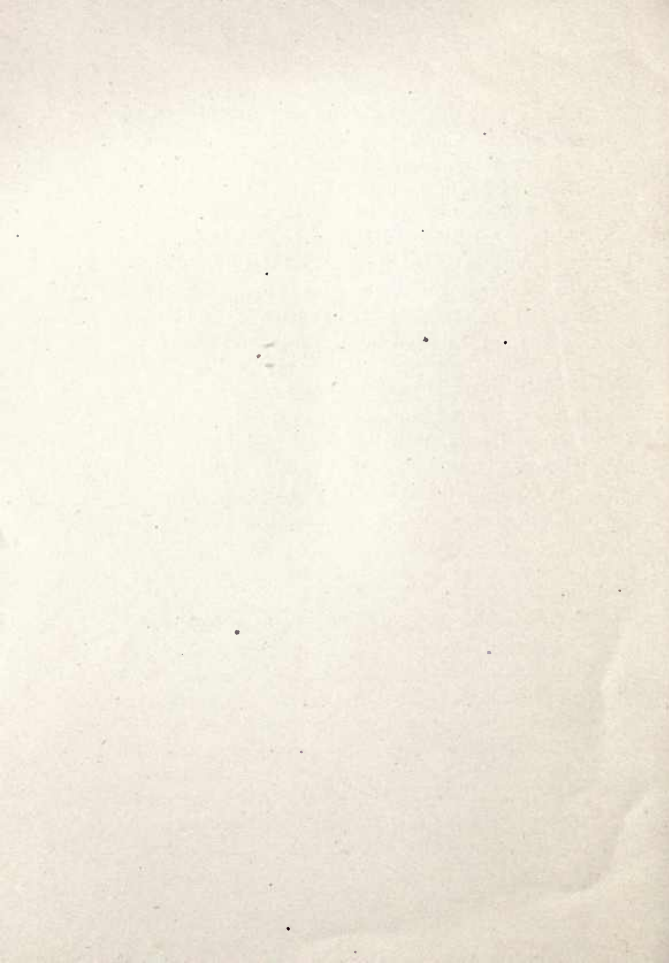
the thoughts of God, as revealed in Nature, is sufficiently rewarded for broken health and exhausted energy if, mayhap, he invent a new method of ginning cotton or a better way of reducing ores. Verily, such men would turn this beautiful earth, the garden of the Almighty, into a fodder-house; this glorious Temple of Nature, with its flowery carpeted floor, and its over-arching skyey dome, into a house of merchandise. They would pluck the lights from heaven and put them in candlesticks. They would hew down the tree of Science to make timber withal, instead of allowing it to bear its noblest fruit for the healing of the nations.

But they who think in this way know nothing of the true dignity of Science, nor, indeed, of the true dignity of Man. From the higher point of view, Science is the *human form*—the *image* of Divine Truth—a revelation of the Divine thought. The end of all revelation, whether natural or supernatural, is to perfect the Divine image in the human spirit. The distinctive mission of Science in this connection is to perfect that image in the human Reason as ideal truth. The highest function of Science, then, is not to lead us downward to Art. This is only the second law; its first and highest law is to lead us upward to the fountain of all Truth. Astronomy is more to be honored for opening the gates of heaven and revealing to us the harmonies of the Universe, than even for extending the limits or increasing the safety of navi-

gation. Geology is more to be valued for opening the gates of Time and revealing the harmonies of the Time-cosmos as shown in the law of Evolution—for “reclathing dry bones and revealing lost creations,” than even for tracing beds of coal or veins of metal. Only it has been mercifully ordered—“for our encouragement it has been ordained”—that every step in the higher walks of Science shall, sooner or later, be attended with material benefits; that every law of Nature, besides its higher function of pointing to the great First Cause, shall also have its appointed duty of contributing to the material wants of man; that Sun, Moon and Stars, while they circle about the throne of God and join their spherul harmony with the songs of angels, shall not forget to bless man in their courses; that streams, whether “adown enormous ravines they slope amain filling the hills with their fierce gladness,” and in their perilous fall thundering the praises of God to the silent listening mountains, or whether they bear the image of heaven on their broad, placid bosoms, shall also turn our mills and water our meadows. But, remember, it is for our encouragement it is thus ordered; not for our supreme reward. Truth is its own exceeding great, unspeakable reward.

There are three, and only three, which bear witness here on earth of things heavenly and divine; there are three, and only three, human pursuits which, passing beyond the veil of Time and Sense,

take hold on things spiritual and eternal. These are Science, Fine Art, Religion. These three strive ever together, each in its several way, to perfect the Divine image in the human Spirit. Science strives ever to perfect that image in the human *reason* as Truth. Art strives ever to perfect the same image in the human *imagination* as Ideal Beauty. Religion strives ever to perfect the same image in the human *will* and the human *heart*—in human *life* and human *conduct*—as Duty and Love. These three seem often to us widely separated, and even, alas! in deadly conflict; but only because we view them on so low a plane. As we trace them upward they converge more and more, until they meet and become *one*. They are, indeed, but the earthly, finite symbol of a Trinity which is infinite and eternal.



University of California
SOUTHERN REGIONAL LIBRARY FACILITY
405 Hilgard Avenue, Los Angeles, CA 90024-1388
Return this material to the library
from which it was borrowed.

MAY

REC'D

MAY 5

REC'D

MAY

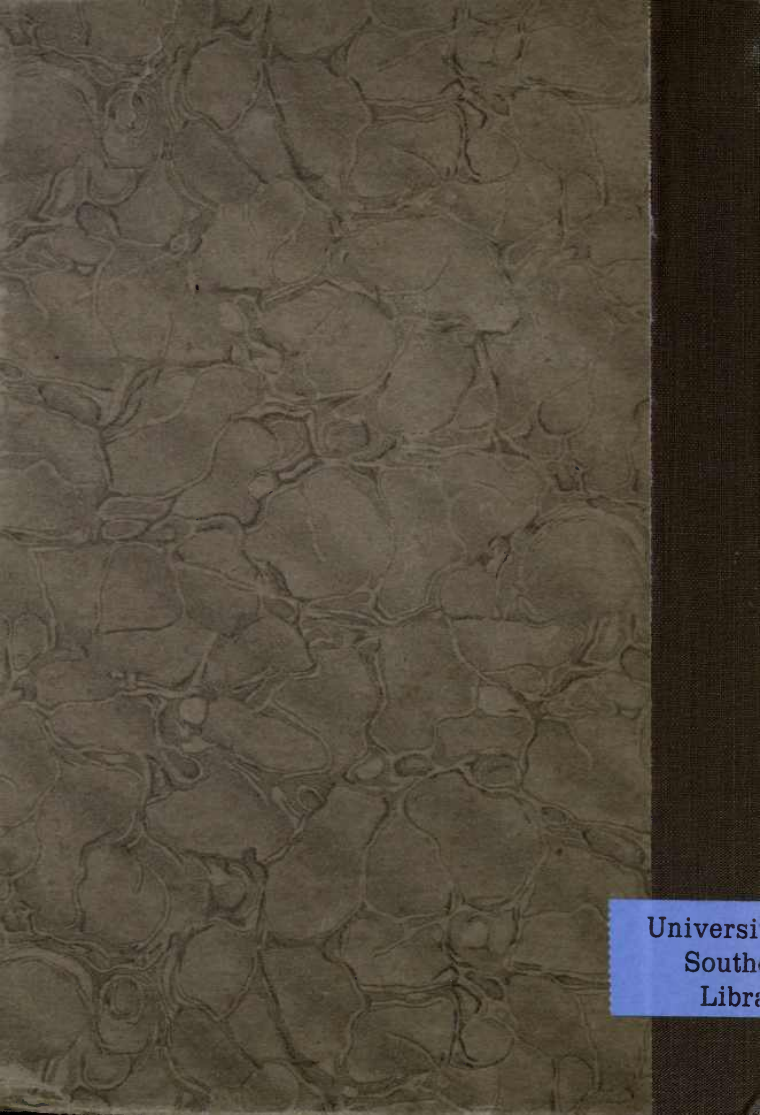
MAY

UC SOUTHERN REGIONAL LIBRARY FACILITY



AA 000 475 531 0

Q171
L492h

The background of the entire image is a brown marbled paper pattern, often called a 'stone' or 'shell' pattern. It consists of irregular, swirling, and cell-like shapes in various shades of brown, tan, and beige, creating a complex, organic texture.

Universi
South
Libra